

Statement to the **Committee on Health, Education, Labor, and Pensions** as part of the roundtable discussion,

“NCLB Reauthorization: Strategies for Attracting, Supporting, and Retaining High Quality Educators”

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Thank you, Chairman Kennedy and Ranking Member Enzi. Thank you for the invitation. My name is William L. Sanders; I am presently Senior Manager, Value-added Research and Assessment, SAS Institute, Inc. Additionally, I hold the honorary title of Senior Research Fellow with the University of North Carolina. Previously, I was Professor and Director of the Value-Added Research and Assessment Center with the University of Tennessee.

Our experiences. I am a statistician that fortuitously got involved with educational research 25 years ago. At that time we began to explore a different analytical approach using student test data. This approach, which I call value-added assessment, is based on the simple notion of following each student’s academic progress over time. Linking each student’s test records from grade to grade over subjects, provides the testing framework for a multivariate, longitudinal analysis in which each student serves as his/her own control. By so doing, educational influences on the rate of student progress can be partitioned from exogenous factors (if not completely, then nearly so) allowing an objective measure of the influence of the district, school and teacher on the rate of academic progress. The process that we have developed, based upon statistical mixed model theory and methodology, enables a multivariate, longitudinal analysis, no matter how sparse or complete the data record for each student. Analyses that accommodate fractured student records eliminate the short-comings of more simplistic value-added approaches.

Some of the more simplistic approaches have been shown to provide potentially biased and unreliable estimates, especially at the classroom level. However, the appropriately constructed multivariate, longitudinal process will minimize the problems of the more simplistic approaches resulting in robust estimates of the influence of educational entities on the rate of student academic progress.

Analyses at the classroom level require the utmost care and caution and present even more burden on the statistical methodology, the computing software, and the data archiving process itself. We have had to engineer the flexibility to accommodate other “real world” situations encountered when providing effectiveness measures at the classroom level: the capability to accommodate different modes of instruction (i.e. self-contained classrooms, team teaching, etc.), “fractured” student records, and data from a diversity of non-vertically scaled tests. However properly applied, the technology now exists to provide estimates to distinguish the highly effective educators who are facilitating excellent academic growth for their students.

From the millions of longitudinal student records that we have created over the years, we have been able to address research questions that heretofore were not easily addressed. The following is a summary of the most important findings.

- If the variability in student academic progress is partitioned into three “buckets”—among Districts, among Schools within Districts, and among Teachers within Schools within Districts--, what is the relative amount of the variability that will go into each bucket?
 - a) Among Districts about 5%,
 - b) Among Schools within Districts about 30%,
 - c) Among Classrooms within Schools within Districts about 65%.
- Differences in teaching effectiveness is the dominant factor affecting student academic progress. This is true in all subjects but is pronounced in Math.
- Teacher effects are cumulative and additive. The sequence of Math teachers that students have can have a profound effect on their ultimate achievement in Math.
- Relative to the distribution of all teachers’ effectiveness,
 - The average beginning teacher is less effective than the average 10-15 year experienced teacher.
 - Beginning teachers profile at about the 35 %tile relative to the distribution of all teachers.
 - Ten to 15 year veterans profile at about the 55 %tile of the teacher distribution. Teachers who leave after one year of experience are on average less effective than those who stay.
 - Of the leavers, those teaching in schools with more than 75% minority students profile at about the 22nd percentile. In schools with more than 75% minority students, beginning teachers who do not leave are only slightly less effective than those beginners assigned to schools with a low percentage of minority students.
- Inner city schools have a disproportionate number of beginning teachers.
- Inner city schools have a much higher turnover rate of teachers than suburban schools.
- A smaller percentage of middle school math teachers within inner city schools have a high school math endorsement.
- Retardation of math gain rates for high achieving inner city middle school students is more pronounced than for lower achieving students.

- Some rural districts have very effective elementary schools, but have high schools that are not extending academic growth opportunities for average and above average achieving students. In some cases this is so severe that even the most advanced students, even if admitted to a four year university, would be nearly certain to have to take remedial courses.
- In too many schools the number of 6th graders prepared to succeed in Algebra in the 8th grade is greater than the number of seats available.
- Students attending schools with over 75% poverty students, when assigned to highly effective teachers, make comparable academic progress with students attending schools with less than 25% poverty students if they too are assigned to highly effective teachers.
- The percentage of highly effective teachers is less in high poverty schools.
- On average there is a big difference in effectiveness between 20+ year veterans in high poverty schools when compared to teachers with similar experience teaching in low poverty schools. Those in the low poverty schools tend to be more effective while those in the high poverty schools tend to be less effective.

Our research has shown that highly effective teachers are facilitating excellent academic progress with students at all achievement levels, regardless of the location of the building where they teach. The evidence is overwhelming that students within high poverty schools respond to highly effective teaching. Then the question becomes “how can the less effective teachers within these schools be assisted in becoming more effective?”

We have had the experience of working with various groups of highly effective educators across the country. According to these educators, “teachers who are average or below in effectiveness must learn to meet the academic needs of all students in their classrooms if they are to become more effective,” i.e. more effective at differentiating instruction. Not only must they be cognizant of the subject knowledge and skills necessary for student success, but they must possess excellent intra-classroom assessment skills and understand how to use the results of their own assessments as well as those from longitudinal analysis of state test data in their teaching decisions. Highly effective teachers maximize the influence of their instructional time so that students at all achievement levels make appropriate progress. These are skills that can be learned, and the influence of their application to teaching can be measured with appropriate reliabilities.

As more reliable student projections to future academic standards have become available, educators are learning to more efficiently target students needing academic interventions and intense academic support. These strategic uses of resources increase the likelihood of at-risk students reaching meaningful standards in the future and provide support for the classroom teacher at the same time.

NCLB testing requirements and federal and state investments in longitudinal data structures allow the reliable student projections referenced above to become more widely available. Additionally, when appropriate methodology is applied to these data, policy makers have a way to more realistically assess the resource requirements necessary for all students to achieve at higher standards. Two recent examples: In a rural school, we found that over 100 6th grade students were on an academic trajectory to be proficient in Algebra I as 8th graders. Yet this school was providing only 25 seats for the 8th grade Algebra offering. In a second school district, even though many students were enrolled in Algebra I in 8th grade, essentially all of them were retaking Algebra I in 9th grade, even when they were prepared to move into more difficult courses in the 9th grade.

We have worked with Battelle for Kids as they prepared professional development for over 100 school districts in Ohio, the Pennsylvania Department of Education and Intermediate Unit 13 of that state as they prepared professional development for the 100 pilots and their statewide rollout of district and school value-added reporting and student projections, the North Carolina Department of Public Instruction to prepare professional development for their school improvement program, the Milken Talented Teacher Program as they worked with over 130 schools receiving both school and teacher level analyses, and the Tennessee Department of Education as the current administration has developed regional professional development for districts, schools and teachers and researched teacher inequity in that state. From these experiences we provide the following recommendations.

Recommendations.

- Major staff development activities with a focus on using the longitudinal projections for each student in both classroom and school planning to ensure that all students have the opportunity to make appropriate academic progress regardless of entering achievement level.
- A greater emphasis on intra-classroom formative assessment to insure that all students are making the desired progress, not merely the students who are at risk of not meeting the proficiency requirements.
- With the reauthorization of NCLB allow the appropriate growth modeling results to be used in lieu of the existing safe harbor provision to eliminate the too prevalent practice of focusing on the “bubble kids.” This should reduce the difficulty that districts are having in recruiting highly effective teachers to schools that are vulnerable for not meeting the present AYP requirements of NCLB. Removing the stigma of failing but keeping enhanced resources available could be a recruiting option in the new reauthorization for schools that demonstrate appropriate growth for their students.

Summary.

We have had several years of experience providing value-added analyses to thousands of districts within many states. We have found that when educators are provided with reliable measures of student progress, then they can evaluate their own strengths and weaknesses. We have observed the progress that schools and teachers have made once they have trust in the reliability of the information and dedicate themselves to improvement.

